

REMARKS

The Final Office Action mailed August 2, 2007, has been received and reviewed. Claims 1, 3-9, and 11-23 are currently pending in the application. Claims 1, 3-9, and 11-23 stand rejected. Applicant has amended claims 1 and 16, and respectfully requests reconsideration of the application as proposed to be amended herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,716,534 to Tsuchiya et al. in view of U.S. Publication No. 2004/0025791 to Chen et al.

Claims 1, 3-9, and 11-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,716,534 to Tsuchiya et al. (“Tsuchiya”) in view of U.S. Publication No. 2004/0025791 to Chen et al. (“Chen”). Applicant respectfully traverses this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, there must be “a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements” in the manner claimed. *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

The 35 U.S.C. § 103(a) obviousness rejections of claims 1, 3-9, and 11-23 are improper because the elements for a *prima facie* case of obviousness are not met. Specifically, the rejection fails to meet the criterion that the prior art references must teach or suggest all the

claims limitations.

Independent Claims 1 and 16

Regarding independent claims 1 and 16 and claims 3-9, 11, 13-15, 17, 23 depending therefrom, Applicant has amended independent claims 1 and 16 to include claim limitations not taught or suggested in the cited references.

Applicant's independent claim 1, as presently amended, recites:

1. A plasma reactor, comprising:
first, second and third power generators wherein the first power generator is coupled to an upper electrode and *the second and third power generators are coupled to a lower electrode* for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; *and*
a controller *configured to* individually selectively *activate the first, second and third power generators to a plurality of activation configurations* during a plurality of phases of a duty cycle of a process, *wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators.* (Emphasis added.)

Applicant's independent claim 16, as presently amended, recites:

16. A plasma reactor, comprising:
a vacuum chamber including upper and lower electrodes therein;
first, second and third power generators wherein the first power generator is coupled to an upper electrode and *the second and third power generators are coupled to a lower electrode* for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; *and*
a controller *configured to* individually selectively *activate the first, second and third power generators to a plurality of activation configurations* during a plurality of phases of a duty cycle of a process, *wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators.* (Emphasis added.)

The Office Action recites:

Tsuchiya et al do not teach a third frequency based power generator coupled to lower electrode.

Chen et al teach a plasma etching apparatus (Figure 1) comprising:

- first, a second and third power generators 162, 150, 154 wherein the first power generator 162 is coupled to an upper electrode 174 and **the second and third power generators 150, 154 are coupled to a lower electrode 120**

for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; and **wherein the second and third generators 150, 154 enable to supply a modulated bias signal to lower electrode 120** to provide improved selectivity and increased process window. (Final Office Action, p. 3; emphasis added.)

Applicant respectfully asserts that neither Tsuchiya nor Chen, either individually or in any proper combination, teach or suggest Applicant's invention as presently claimed in amended independent claims 1 and 16. Generally, Applicant's invention as presently claimed recites different activation configurations for the two power generators of the lower electrode while Chen teaches only a single constant configuration of the two power generators of the lower electrode. Specifically, Applicant's invention as presently claimed recites, in part, "second and third power generators [] coupled to a lower electrode ... and ... configured to [] *activate the [] second and third power generators to a plurality of activation configurations ...*, wherein ***at least one*** of the plurality of activation configurations ***includes differently activating*** the second and third power generators."

In distinct contrast, Chen specifically teaches ***only a single activation configuration of the two power generators coupled to the lower electrode***. Specifically, Chen teaches:

As such, the signal from the first bias power supply 150 amplitude modulates the signal from the second bias power supply 154. (Chen, para. [0031]).

At step 310, the bias power supplies 150 and 154 are activated and the biasing element 120 is *biased with the modulated bias signal*. (Chen, para. [0045] ; emphasis added).

In particular, the intermediate RF bias power source 150 and low RF bias power source 154 are turned on, and the biasing element 120 is biased Furthermore, the two bias power sources 150 and 154 *provide a modulated signal* (Chen, para. [0046] ; emphasis added).

Clearly, Chen teaches of two activated power supplies coupled to a lower electrode, however, Chen teaches of only a single activation configuration, namely the combined both active modulation configuration, of the second and third power supplies. In contrast, Applicant's invention as presently claimed recites, in part, "***at least one*** of the plurality of activation configurations ***includes differently activating*** the second and third power generators."

Therefore, since neither Tsuchiya nor Chen teach or suggest Applicant's claimed invention including the element of "second and third power generators [] coupled to a lower electrode ... and ... configured to [] *activate the [] second and third power generators to a plurality of activation configurations* ..., wherein *at least one* of the plurality of activation configurations *includes differently activating* the second and third power generators", these references, either individually or in any proper combination, cannot render obvious, under 35 U.S.C. §103, Applicant's invention as presently claimed in amended independent claims 1 and 16. Accordingly, Applicant respectfully requests the rejections of presently amended independent claims 1 and 16 be withdrawn.

Dependent Claims 3-9 and 11-23

The nonobviousness of independent claim 1 precludes a rejection of claims 3-9, 11 and 13-15 which depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 1 and claims 3-9, 11 and 13-15 which depend therefrom.

The nonobviousness of independent claim 16 precludes a rejection of claims 17-23 which depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 16 and claims 17-23 which depend therefrom.

CONCLUSION

Claims 1, 3-9 and 11-23 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,



Kevin K. Johanson
Registration No. 38,506
Attorney for Applicant
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

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